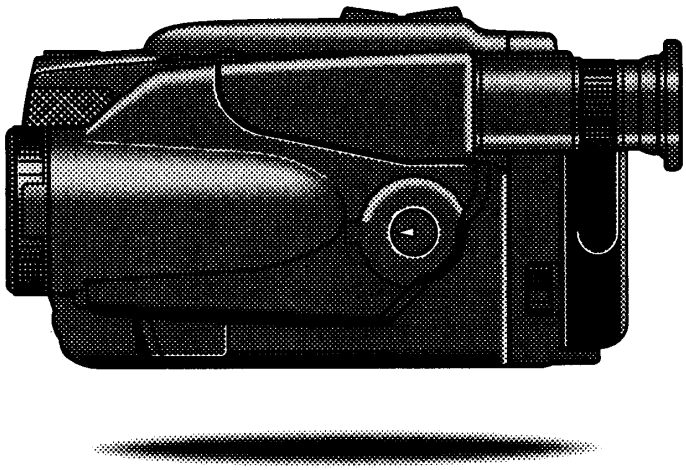
SANYO

INSTRUCTION MANUAL

VM-EX22P

8 mm Camcorder



Instruction Manual **English**

Features

- 10x power zoom
- Fuzzy logic system
  - Full range auto focus (Manual focus: dial)
  - Auto exposure
  - Auto white balance
- User-friendly operation
  - 6 Preset modes
  - Stand-by switch
- Infrared remote control
- Fade-in, Fade-out
- 8 Segments programmed editing

8 PAL

PRECAUTIONS

Condensation

Condensation is the moisture that forms on the outside of a glass when you fill it with cold water.

Your camcorder incorporates a special safety device to avoid damage to the unit and to protect the internal mechanisms and tape when condensation is detected inside the unit.

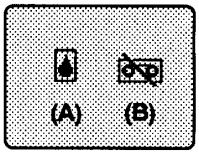
Conditions where condensation might appear

- If the camcorder is suddenly moved from a cold place to a warm, humid one, or vice versa.
- If a heater has been turned on to quickly heat the room, or if the level of humidity is high.
- If taken from an air conditioned room, or car to a hot humid place.

Condensation warning indicator

- If condensation is detected inside the camcorder, the warning indicator illustrated below (A) will flash in the viewfinder.

  As condensation may also appear inside the cassette casing, the warning indicator (B) might also flash when the cassette is loaded. When one of those indicators is displayed, the controls will be inoperative, except to unload the cassette. In such a case, eject the cassette and wait for 1 – 2 hours for the condensation to dry up. The time required to completely eliminate condensation may vary according to conditions.
- The first sign of condensation is fogging of the camcorder lens and viewfinder. As condensation may not have yet reached the inside of the camcorder the warning indicators will not appear. To stop the formation of condensation, wrap the camcorder in a cloth until the fogging on the lens and in the viewfinder disappears.



To prevent formation of condensation

In places like ski slopes, where the camcorder is subject to temperature variations, place the camcorder in a plastic bag before using it outside. When bringing back the camcorder indoors, leave it in the plastic bag for about one hour.

DO NOT OPEN THE CAMCORDER CASING

- Do not allow rain, steam, dew, salt water, sand, oily smoke, metal objects, etc. to enter the unit.
- Do not let direct sunlight or strong light hit directly on the lens or the viewfinder, as that may cause damage to the unit.
- If you notice anything unusual (smoke, strange noise or odour, etc.), stop using the unit and switch it off immediately. Consult the dealer where the unit was purchased, or contact an authorized service centre.

Precautions during recording or playback

- Do not wrap the camcorder in a cloth, as the temperature inside will raise and damage the unit.
- Do not approach the camcorder to magnets, or magnetic fields as they may damage the recordings on the tape.
- Do not approach the camcorder to transmitting antennas, as this might cause the unit to malfunction.
- Do not use the unit for monitoring. If the unit is used to record the same subject for a long time (e.g. for surveillance), the picture quality will deteriorate.

Storage

Do not store the unit in the following locations:

- where it will be subject to direct sunlight (e.g. on a car dashboard, etc.),
- near bright light sources, or where the humidity level is high,
- in a closed car on warm or hot days, or close to a heat source (e.g. heater, stove, etc.),
- in presence of excessive dirt or dust,
- where it will subject to strong vibrations, or near strong magnetic fields.

ABOUT COPYRIGHTS

Your recordings should only be used for personal purposes. The public showing of such material may be contrary to applicable laws.

SAFETY WARNINGS

England (BEAB) only

THIS PLUG IS NOT WATERPROOF-KEEP DRY

This cord is already fitted with a moulded plug incorporating a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA approved BS 1362 fuse must be used of the same rating, marked thus ASTA.

If the fuse cover is detachable, never use the plug with the cover omitted. If a replacement fuse cover is required ensure, it is of the same colour as that visible on the pin face of the plug (ie red or orange). Fuse covers are available from the Parts Department indicated in your User Instructions.

If the plug supplied is not suitable for your socket outlet, it should be cut off and destroyed. The end of the flexible cord should be suitably prepared and the correct plug fitted.

WARNING: A PLUG WITH BARED FLEXIBLE CORDS IS HAZARDOUS IF ENGAGED IN A LIVE SOCKET OUTLET.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue = Neutral
Brown = Live

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal in the plug which is marked with the letter N or coloured Blue or Black. The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

Australia only

WARNING:

- Return to supplier for repairs.
- Should the power supply cord become damaged, it must be replaced by the special cord.

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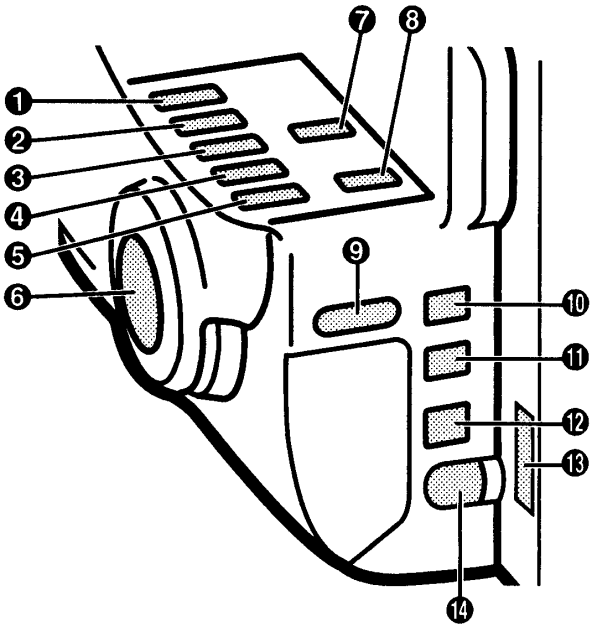
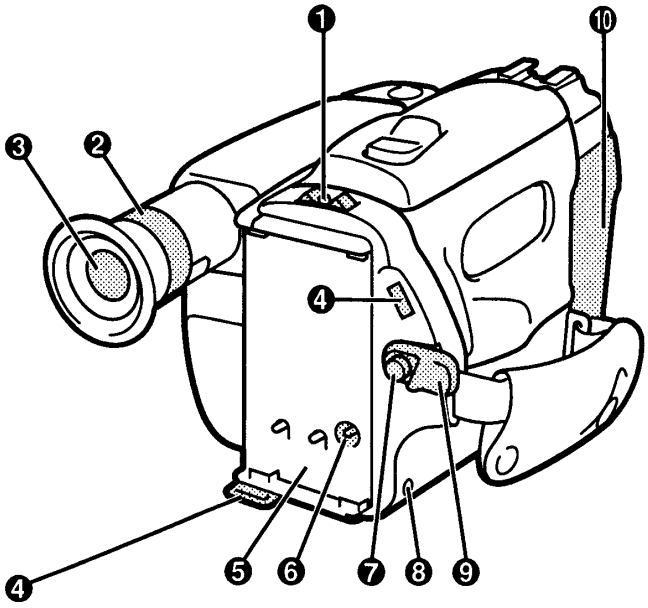
CAMCORDER PARTS NAMES

Control panel

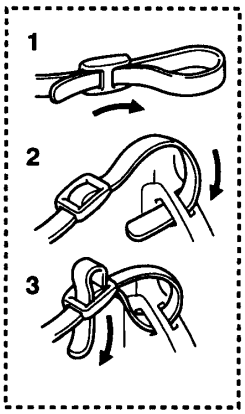


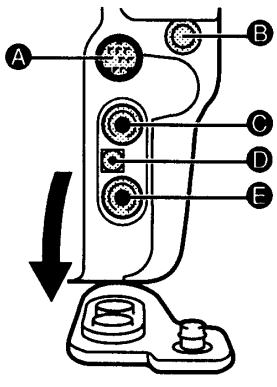
❶ Rewind/Reverse search button (**REW**)
❷ Playback button (**PLAY**)
❸ Fast-forward/Forward search button (**FF**)
❹ Still button (**STILL**)
❺ Stop button (**STOP**)
❻ Preset mode selector
❼ On-screen display button (**DATA ON SCREEN**)
❽ Cassette eject button (**EJECT**)
❾ Auto focus/Manual focus select button (**FOCUS AF/MF**)
❿ Counter reset button (**COUNTER RESET**)
⓫ Counter memory button (**COUNTER MEMO**)
⓬ Date/Time select button (**DATE**)
⓭ Battery release button (**BATT**)
⓮ Fade button (**FADE**)

Rear



❶ Power switch (**POWER; CAMERA, OFF, PLAYER**)
❷ Eyesight compensation ring
❸ Viewfinder
❹ Shoulder belt hook
Install the shoulder belt as illustrated.
❺ Battery pack holder
❻ DC input terminal
❼ Recording start/stop button (**REC START/STOP**)
❽ LANC terminal (🕓)
❾ Stand-by switch (**STANDBY, POWER SAVE**)
❿ Terminals cover
Ⓐ Remote control terminal (**REMOTE**)
Ⓑ External microphone jack (**MIC**)
Ⓒ Video output terminal (**VIDEO**)
Ⓓ DC output terminal (for RF convertor)
Ⓔ Audio output terminal (**AUDIO**)

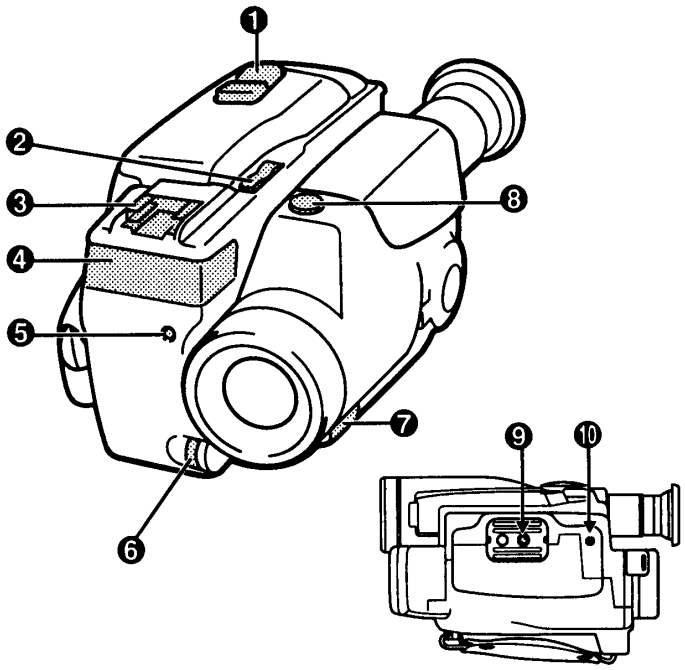




CAMCORDER PARTS NAMES

Front & Bottom

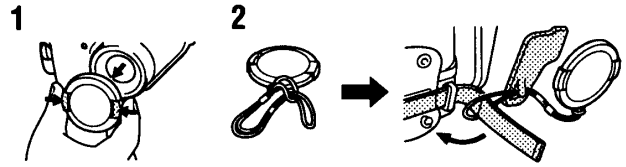
❶ Power zoom button (**T, W**)
❷ Scene search buttons (**SCENE SEARCH +, –**)
❸ Accessory shoe (hot shoe)
❹ Microphone (monaural)
❺ Recording indicator
❻ Manual focus dial (**MANUAL FOCUS**)
❼ Lithium battery tray
❽ Remote control sensor
Press to expose it, it can then be turned 360° to face the remote control location.
❾ Tripod screw mount
Align the tripod mounting screw with the tripod mounting hole in the bottom of the unit. Then, securely tighten the mounting screw.
❿ Date and time adjustment button (**ADJ**)



PREPARATION

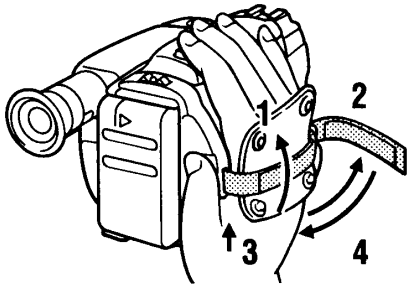
Lens cap

1 To remove the lens cap, press on both sides, as illustrated.
2 To prevent losing the lens cap, attach it to the camcorder using the cord.



Adjusting the grip belt

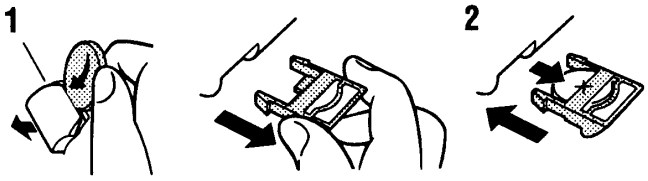
Adjust the grip belt as illustrated, so that it is tight around the hand when the **REC START/STOP** button and the power zoom button are reached with the tip of the fingers.



Installing the lithium battery

After the lithium battery is installed, the time and date will need to be set. (See pages 9 and 10.)

1 Open the lithium battery tray (at the bottom of the camcorder), using a coin as shown below.
2 Insert the lithium battery in the tray with the (+) sign facing up.
Insert the tray back into the camcorder.



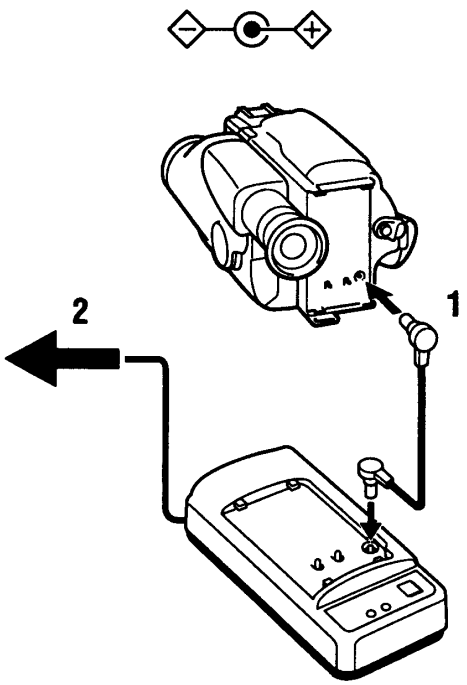
AC adaptor/charger

The AC adaptor/charger is used to power the camcorder indoors, where an AC outlet is available. It is also used to recharge your battery pack(s).

The supplied AC adaptor/charger can be used in any country where the standard voltage is between 100 V and 240 V AC. In countries where a differently shaped plug is used, a plug adaptor must be used. (See your Sanyo dealer for details.)

1. Connect the DC connecting cord from the DC output terminal on the AC adaptor/charger to the DC input terminal on the back of the camcorder.
2. Plug the AC adaptor/charger power cord into an AC outlet.

☞ **Note:** For this product use the supplied AC adaptor/charger (conforming to the EIA Japanese standard, with a unified polarity type plug). Use of another AC adaptor/charger may cause trouble.

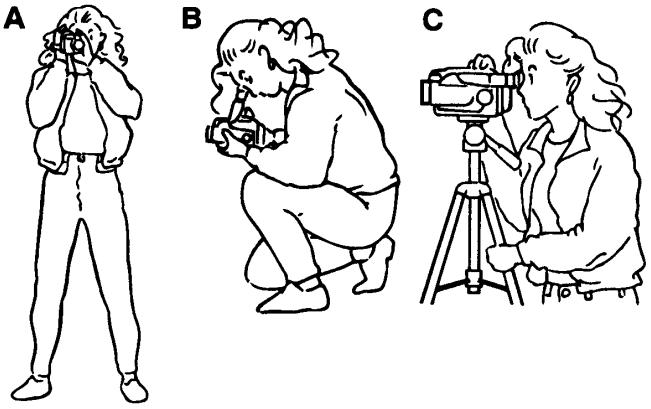


Holding the camcorder

A: Keep your feet slightly apart, and the upper arms close to the body. Hold the camcorder horizontally. When possible rest your elbows on a table, or your back on a wall, etc. for more stability.

B: Raise the viewfinder, for a comfortable low angle recording position.
The viewfinder can be raised up to about 75°.

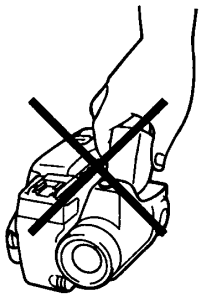
C: Use a tripod for jitter-free pictures.



■ Use the grip belt to carry the camcorder

Holding it as shown in the illustration below might damage the camcorder or some of its components.

Remove the cassette tape when the unit is not being used.



RECORDING BASIC STEPS

1 Install a charged battery pack on the camcorder. (See pages 7 and 8.)

2 Load a cassette tape. (See page 7.)

3 Set the **POWER** switch to "**CAMERA**".

Set the **POWER** switch while holding down the small button in the centre of the switch.

4 Set the preset mode selector to "**AUTO**". (See page 11.)

5 Set the stand-by switch to "**STANDBY**".

"**PAUSE**" is displayed in the viewfinder.

When the **POWER** switch is set to "**CAMERA**", the stand-by switch is used as follows:

(A) "**STANDBY**" position

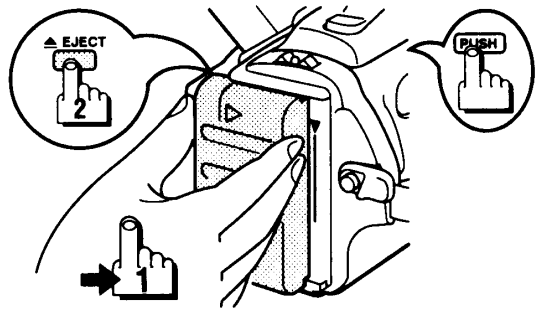
For recording; press the **REC START/STOP** button to start recording or to go into recording pause mode.

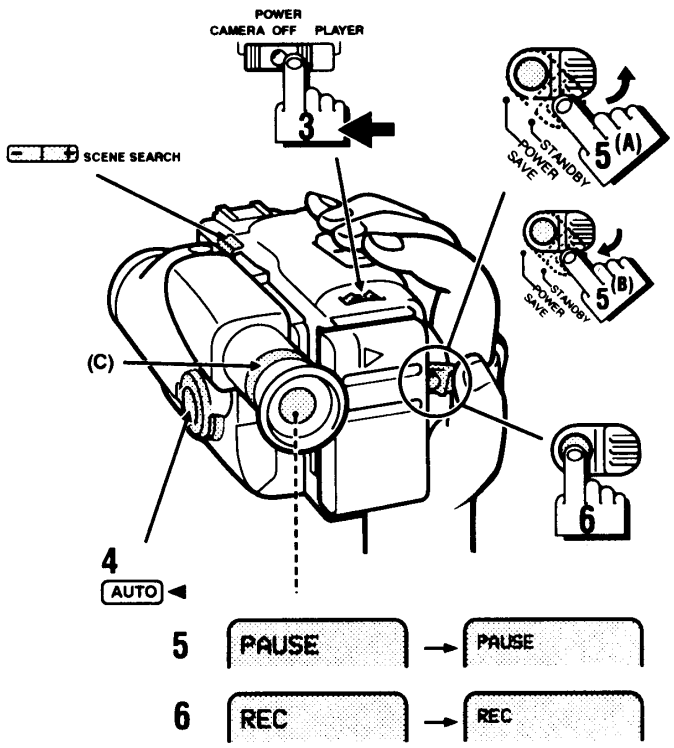
(B) "**POWER SAVE**" position

When not recording momentarily; the power to the viewfinder is cut in order to save the battery pack charge.

6 Press the **REC START/STOP** button to start recording.

"**REC**" is displayed in the viewfinder.





To stop recording, press the **REC START/STOP** button again. Recording will stop and "**PAUSE**" will be displayed in the viewfinder. To resume recording press the **REC START/STOP** button again.

When finished recording, press the **REC START/STOP** button, then unload the cassette tape and set the **POWER** switch to "**OFF**".

☞**Notes:**

- Vertical stripes may appear when recording in a dark place a light source such as a candle light, etc.
- If a recording pause continues for more than 5 minutes, the power is cut to prevent the tape from being damaged. To resume recording, press the **REC START/STOP** button twice.

Eyesight compensation ring

Turn the camcorder on, then while looking into the viewfinder turn the ring **(C)**, to the right or to the left, to obtain the clearest possible picture.

Recording review

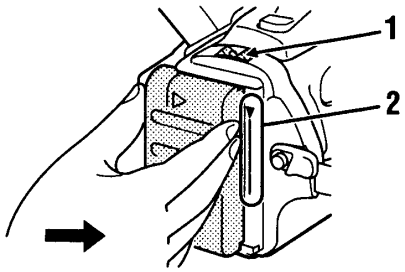
If the camcorder is in recording pause mode, press and release the **SCENE SEARCH (–)** button once to review, in the viewfinder, the last few seconds of the recording. Then, the camcorder will automatically return to recording pause mode at the exact point where it previously was.

☞**Note:** Do not hold the **SCENE SEARCH (–)** button as the camcorder will go into scene search mode.

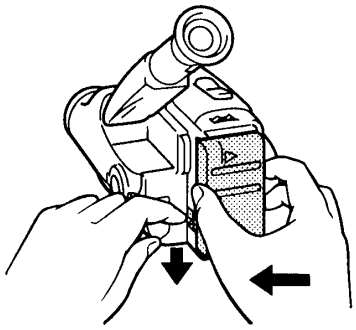
Installing the battery pack

The supplied battery pack has not been charged, make sure to charge it before using it on the camcorder for the first time.

1 Set the **POWER** switch to "**OFF**".
2 Align the right side of the battery pack with the line on the camcorder. Then, while pressing it down, slide the battery pack toward the right until a click is heard.



To remove the battery pack, push and hold down the **BATT** button, then slide the battery pack in the opposite direction of the arrow on the battery pack (▷).

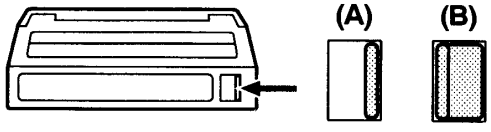


Erasure-prevention switch

To prevent accidental erasure of recorded material, use the erasure-prevention switch, as described below.

(A) Recording is possible

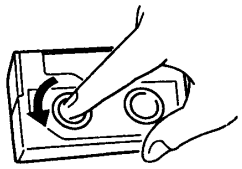
(B) Recording is not possible



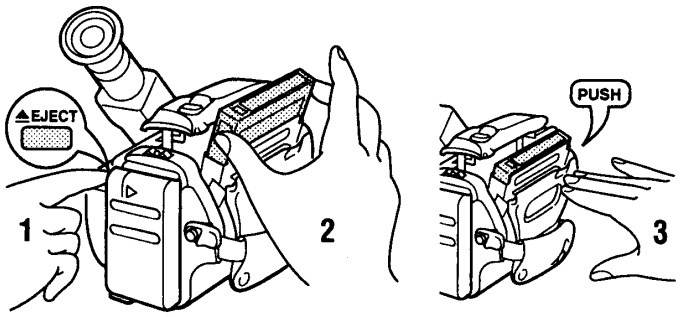
Loading a cassette

Before loading the cassette

Recorded cassettes or new cassettes tapes may be loosely wound. Loose tape winding can be eliminated by gently turning with a finger the left reel, see illustration, at the bottom of the cassette.



1 Press the **EJECT** button, the cassette holder will open.
2 Insert the cassette fully with the window facing outwards.
3 Gently press on the indication "**PUSH**" on the cassette holder until it clicks into place.



■ Unloading the cassette

1 Press the **EJECT** button, the cassette holder will open.
2 Remove the cassette.
3 Gently press on the indication "**PUSH**" on the cassette holder until it clicks into place.

☞**Notes:**

- Do not cover the holes at the bottom of the cassette.
- Store the cassettes in their case, away from strong light or heat sources, standing upright (vertical) to prevent dust from entering, as well as uneven tape winding.

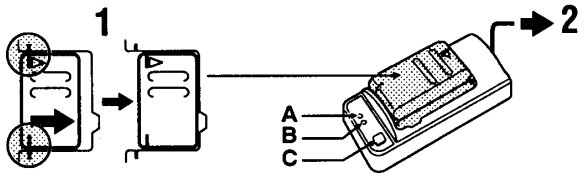
BATTERY PACK AND LITHIUM BATTERY

Recharging the battery pack

1 Align the marks on the battery pack with the ones on the AC adaptor/charger and while pressing it down, slide it in the direction of the arrow until a click is heard.

2 Plug the AC adaptor/charger power cord into an AC outlet. The **POWER** indicator **(A)** lights.

When the battery pack is installed on the AC adaptor/charger and the power cord is plugged in an AC outlet, the **CHARGE** indicator **(B)** will light and the battery pack is automatically recharged. When it is fully charged, the indicator will go off. Remove the battery pack in the reverse order of installation.



Precautions concerning the use of the battery pack

- When recording, make sure to completely exhaust the charge of the battery pack.

  To completely exhaust the charge of the battery pack, when the indicator ⊏▷ flashes in the viewfinder press the **REC START/STOP** button to set the recording pause mode then wait until the power runs out.
- The battery pack should only be recharged just before it will be used, or one day before at the most.

  If the battery pack is recharged and not used it will slowly loose its charge.
- In the following cases the operating time of the battery pack will be shorter than normal even after a full charge.
  - If it is stored charged or half charged
  - If the charge is completely exhausted and it is stored for a long period (more than 3 months)
  - If stored at temperatures above 40°C (104°F)

  The charge will be restored to its original level, after the battery pack has been used until completely discharged and recharged, or after it has been recharged using the Refresh function of the AC adaptor/charger, this two or three times.

Refreshing the battery pack

Install the battery pack on the AC adaptor/charger, then press the **REFRESH** button **(C)**. The **CHARGE** indicator **(B)** will flash (slow cycle), and the remaining charge of the battery pack is discharged, then the **CHARGE** indicator will stop flashing and the battery pack is automatically recharged.

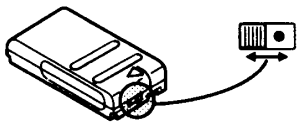
☞**Notes:**

- If the **CHARGE** indicator flashes rapidly, remove the battery pack immediately, then try again making sure the battery pack is correctly installed. If the **CHARGE** indicator still flashes rapidly it may indicate that the battery pack cannot be used. Please consult your dealer for assistance.
- When finished, make sure to unplug the AC adaptor/charger power cord from the AC outlet.
- **Do not use the AC adaptor/charger (VAR-S15A) for any purpose other than charging the battery packs (NP-55, NP-77, NP-77H or NP-S88A), or supplying power to this camcorder.**

■ Charge condition indicator switch

When the battery pack is fully charged, slide the switch on the end of the battery in order to reveal the red circle. Once it is exhausted, slide the switch to cover the red circle.

This switch is used as a reminder only, it has no function in the operation of the battery pack.

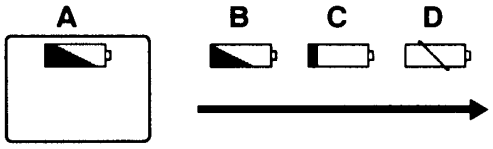


■ Battery pack remaining power indicator

The remaining charge in the battery pack is displayed in the viewfinder, as indicated by **(A)** and **(B)**.

(C): The remaining charge is low and it is recommended to have a spare recharged battery pack ready.

(D) (flashing)**:** The power to the camera will soon be cut off.



☞**Note:** While using the AC adaptor/charger the battery pack power indicator may appear in the display, this does not indicate a problem with the AC adaptor/charger or the camcorder.

Battery pack

Charging/Operating time

When the battery pack is fully charged, the approximate available operating time (the camcorder in recording mode only), at normal temperatures, is as described below.

Battery pack model	Refresh time	Charging time	Operating time
NP-55 (supplied)	210 min.	60 min.	65 min.
NP-77*	420 min.	120 min.	130 min.
NP-77H*	480 min.	150 min.	140 min.

* Sold separately

■ Ni-MH battery pack

This AC adaptor/charger can also be used to charge Ni-MH battery packs (model NP-S88A, sold separately). For more details, please consult the dealer where the unit was purchased.

☞Notes:

- The following operations also require power, and will shorten the operating time indicated above. It is therefore recommended to have available charged battery packs to last 2 or 3 times the actual planned recording duration.
  - ■ Recording pause mode
  - ■ Using the power zoom
  - ■ Loading and unloading the cassette
  - ■ Using a video light (sold separately)
  - ■ Monitoring the recording on the remote control colour monitor
- When the battery pack is used for the first time, the operating time will be slightly shorter than normal. It should be used until completely discharged and recharged two or three times before the complete charge is available.
- Charging the battery pack is possible within a temperature range of 5°C to 35°C (41°F to 95°F). For best results, a temperature range of 10°C to 30°C (50°F to 86°F) is recommended.
- If the camcorder is not used for a long period, remove the battery pack. If not, the battery pack will slowly loose its charge.
- Do not store a battery pack where it could reach high temperatures.
- Battery packs last shorter when used in low temperatures.

WARNING:

- Do not short-circuit the battery pack terminals, and never try to disassemble or modify it.
- Do not throw in the fire, as it may explode.
- Do not get wet.
- When not in use, the battery pack should be removed and stored in a cool dry place.
- Place the battery pack in its case for storage or transport.
- Do not drop or subject to violent shock.
- During use and recharge, the battery pack will get warm, this is normal and does not indicate a malfunction.
- If the terminals are dirty, use a soft cloth or tissue paper to clean them.
- The battery pack operating temperature range is 0°C to 40°C (32°F to 104°F), the operating time will shorten as its temperature lowers.

Lithium battery

Under normal conditions, the lithium battery should last about 1 year. If the lithium battery is expired "**88:88**" will flash in the viewfinder.

WARNING:

- The lithium battery must only be replaced with a lithium battery model number **Sanyo** CR2025 [3 V]. Use of another lithium battery may present the risk of fire or explosion.
- Keep the batteries away from children.
- If a battery is swallowed, see a doctor immediately.
- Dispose of used lithium batteries promptly, in a safe manner that complies with all applicable laws.
- The lithium battery may present the risk of fire or chemical burn if mishandled. Do not recharge, disassemble, heat above 100°C (212°F) or dispose of in the fire.
- Before use, wipe the battery clean with a dry soft cloth to assure good contact.
- Never use metallic tweezers to hold the battery, and never short circuit the (+) and (–) sides of the battery.

SETTING THE DATE AND TIME

Before setting the date and time, make sure the lithium battery is installed.

Example: Setting the date and time to 2:10 P.M., December 24, 1995.

1 Set the **POWER** switch to "**CAMERA**".

2 Press the **ADJ** button for about two seconds. The reset time (0:00:00) and date (1. 1. 1994) are displayed flashing.

Use a thin object, such as a pen, to press the **ADJ** button at the bottom of the camcorder.

3 Press the **DATE** button until the desired day (24) is set, then press the **ADJ** button.

When holding the **DATE** button to set the date and time, the numbers will change rapidly. When the desired setting approaches, release the button, then press it repeatedly so that the desired number is not missed.

4 Press the **DATE** button until the desired month (12) is set, then press the **ADJ** button.

5 Press the **DATE** button until the desired year (1995) is set, then press the **ADJ** button.

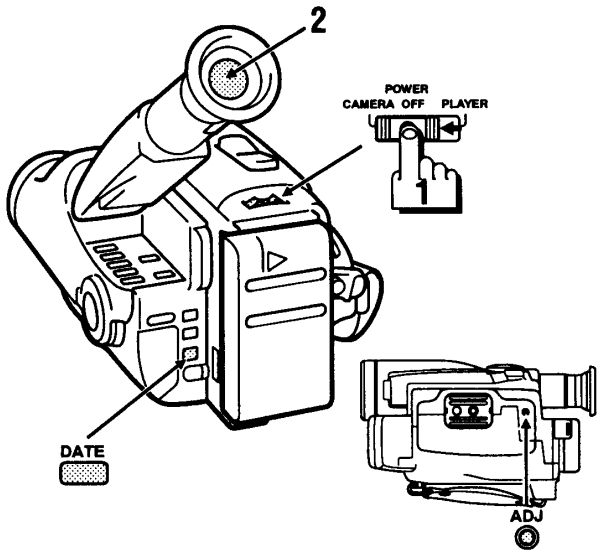
6 Press the **DATE** button until the desired hour (14 (2 P.M.)) is set, then press the **ADJ** button.

7 Press the **DATE** button until the desired minutes (10) are set.

The seconds counter will start counting from "**00**" when the **ADJ** button is pressed after setting the minutes. To set the seconds accurately, press the **ADJ** button in coordination with the actual time indication (radio signal, etc.).

☞Notes:

- The date and time are not displayed when the **POWER** switch is set to "**PLAYER**".
- The date and time cannot be set while in recording or playback mode.
- If "**88:88**" is displayed flashing, it indicates that the lithium battery is exhausted. Replace it with a new one, and reset the date and time.
- The date and time need to be set only once. However, they will need to be reset after the lithium battery is replaced.



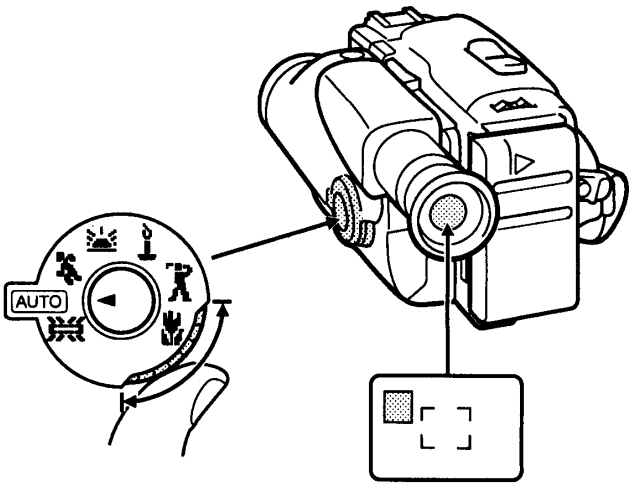
2	ADJ	0:00:00 1 1 .1994
3	DATE → ADJ	0:00:00 24 1 .1994
4	DATE → ADJ	0:00:00 24 12 1994
5	DATE → ADJ	0:00:00 24 12 1995
6	DATE → ADJ	14:00:00 24 12 .1995
7	DATE → ADJ	14:10:00 24 .12 .1995

Preset modes

By turning the preset mode selector, you can set one of the preset modes by aligning the arrow with the mode indicator. Using preset modes you can easily record fast moving subjects, record under insufficient light conditions, etc.

When a preset mode is selected, the corresponding indicator will appear in the viewfinder.

☞**Note:** When a preset mode is set or changed, the focus is automatically reset to auto focus mode.



Indicator	Shutter speed	Auto focus range
	1/120 sec.	1 cm to ∞
	1/50 to 1/250 sec.	2.5 m to ∞ centre frame area only
	1/50 sec.	1 cm to ∞
	1/50 sec.	1 cm to ∞
	1/250 to 1/10,000 sec.	1 cm to ∞
	1/50 sec.	1 cm to 2 m

■ Flickerless mode

This mode is used to record under fluorescent lighting, if a flickering picture is seen in the viewfinder. This may be useful when recording under fluorescent lamps in a foreign country where the current is 60 Hz.

■ Auto mode

Normally, this mode should be used under normal recording conditions.
In the Auto mode no indicator will appear in the viewfinder. The shutter speed is set to 1/50 sec. and the auto focus range to 1 cm to ∞, for best recording under normal conditions.

■ Sports mode

This mode is used for recording football games, or other fast-moving subjects. When using this mode the main subject should be kept in the frame area at the centre of the viewfinder for the focus to function properly.

Colours may change if this mode is used indoors under fluorescent lighting.

■ Twilight mode

Use this mode to capture the colours of sunrise or sunset.

■ Low Light mode

This mode will give the best results when recording indoors under low light conditions. Brighter pictures will be recorded but the picture quality will be coarser.

Should not be used if the lighting is sufficient.

■ Auto High Speed Shutter mode

For recording very fast movements such as a golf swing, a tennis stroke, etc., that will give a clear playback picture.

Colours may change if this mode is used indoors under fluorescent lighting.

■ Close-up mode

This mode will permit you to record small subjects such as flowers, insects, etc. at short distance. The zoom will be automatically set to full wide-angle position.

ND filters

ND4 filters available on the market, give good results, when recording on a beach or a ski slope if the sun is very strong, so that the picture is not over exposed. For more details, please consult the dealer where the unit was purchased.

Auto focus

With the **POWER** switch set to "**CAMERA**", set the preset mode selector to "**AUTO**" and the auto focus mode will be set. The camcorder will automatically focus on any subject at a distance of 1.1 m or more from the lens.

In the following recording conditions the focus may not adjust properly. It is recommended to switch to manual focus and if necessary change the preset mode selector setting to get a focused picture. (See page 11.)

A: When recording two subjects, one nearby and one distant.

B: When recording through a dirty or wet window.

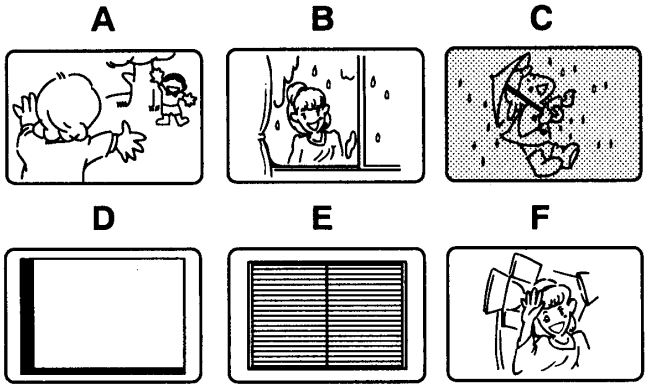
C: When recording a dark subject.

D: When recording subjects without contrast (a white wall, etc.).

E: When recording a horizontally stripped subject.

F: When recording very bright subjects.

- When recording a fast moving subject.
- When using a filter or conversion lens.



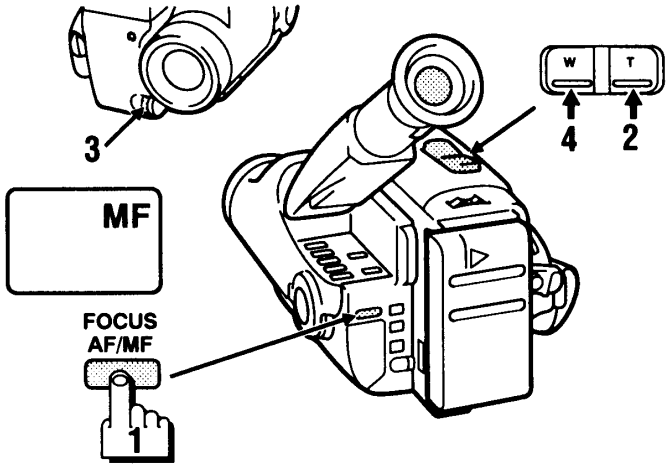
☞**Note:** When zooming in to record a distant subject, at close-range, the auto focus might not function properly due to the instability of the picture. In that case, use a tripod for stable focused pictures.

Close-up recording

When recording a subject closer than 1.1 m, change to wide-angle (the subject is as small as possible in the viewfinder). At full wide-angle, the focus is automatically set at distances as close as 1 cm from the lens. (See close-up mode, page 11.)

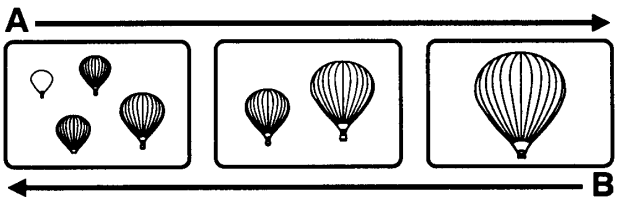
Manual focus

1. Press the **FOCUS AF/MF** button.
   "**MF**" is displayed in the viewfinder.
2. Press "**T**" of the power zoom button to zoom in on the subject.
3. Turn the manual focus dial to adjust the focus.
   If the focus is adjusted on a zoomed out picture, it may not be adjusted when changing to a zoomed in picture.
4. Press "**W**" of the power zoom button to select the desired recording field.



Zooming

Press the "**T**" side of power zoom button for a close-up shot (A: Zoom-in) and the "**W**" side for a wide-angle shot (B: Zoom-out).



☞**Notes:**

- Picture vibration is more noticeable when zooming in to record a close-up shot. If possible, use a tripod or make sure that the camcorder is kept steady.
- When the **POWER** switch is set to "**OFF**", the zoom will automatically return to the zoom-out position.

Linear time counter

The linear time counter indicates the tape run time in hours, minutes and seconds.

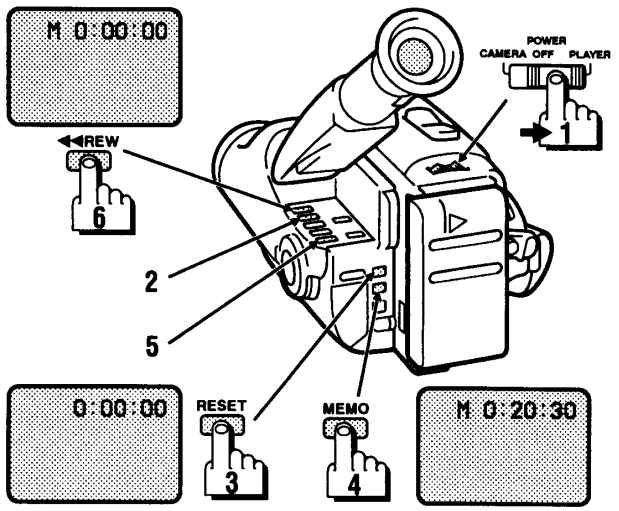
■ Using the memory function

1. Set the **POWER** switch to "**PLAYER**".
2. Press the **PLAY** button.
3. Press the **COUNTER RESET** button.

   Press the **COUNTER RESET** button to reset the counter to "**0:00:00**". If you reset the counter at the beginning of the tape, you can determine the recording duration.
4. Press the **COUNTER MEMO** button.

   Press the **COUNTER MEMO** button and "**M**" is displayed. When "**M**" is displayed, the "**0:00:00**" point is memorized (not the point where the **COUNTER MEMO** button was pressed). Press the **COUNTER MEMO** button again to erase the "**M**" and cancel the memory function.
5. Press the **STOP** button.
6. Press the **REW** button.

   The tape will be rewound and will automatically stop at the counter reading "**0:00:00**".



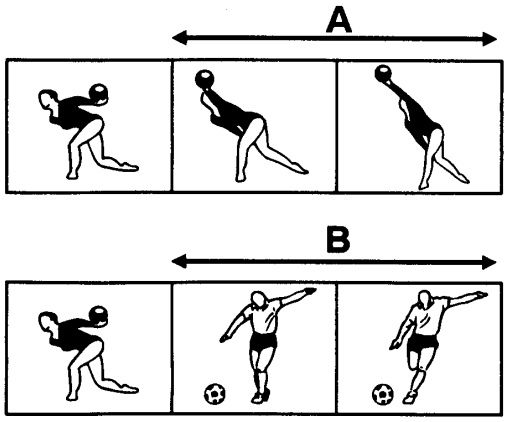
☞**Notes:**

- When pressing the **REW** button, the tape might not stop at the exact "**0:00:00**" location.
- If the tape is rewound past "**0:00:00**", the counter reading will indicate a negative "**–**" value.

Transition recording

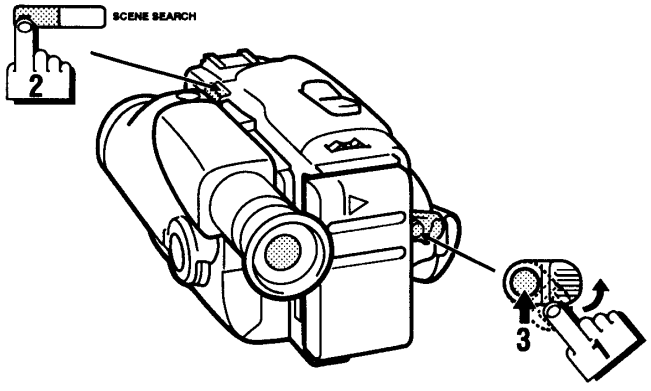
If at the end of a recording, some unwanted pictures and sound have been recorded, they can be eliminated by replacing them with newly recorded pictures and sound.

Example: To replace unwanted pictures **(A)** by new pictures **(B)**.



1. Set the camcorder to recording pause mode.
2. Press and hold the **SCENE SEARCH (–)** button until the beginning of the unwanted pictures.
3. Press the **REC START/STOP** button to start recording the new pictures.

☞**Note:** At playback, during scene search operations, white bars will appear at that position.



Fade-in, Fade-out

The fade-in **(A)** will bring the picture and sound gradually. Fade-out **(B)** will do the reverse, gradually erasing the picture and sound.

1 For example, after recording a title, set the camcorder to recording pause mode, then press the **FADE** button.

"**FADE**" is displayed in the viewfinder.

2 Press the **REC START/STOP** button.
The picture and sound will gradually fade in from a white background.

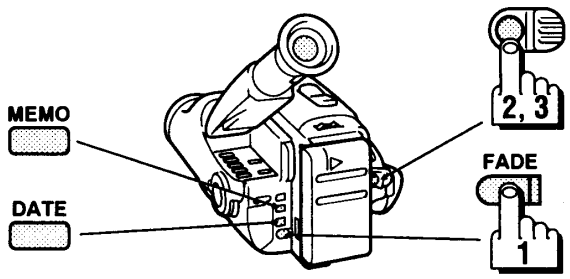
- "**FADE**" flashes: Fade-in
- "**FADE**" lights: End of fade-in

☞**Note:** During the fade-in, "**FADE**" flashes in the viewfinder. Do not press the **REC START/STOP** button while "**FADE**" is flashing in the viewfinder, as that will cancel the fade-in function.

3 Press the **REC START/STOP** button again.
The picture and sound will gradually fade out to a white background, and the camcorder will go into recording pause mode and the fade function is cancelled ("**FADE**" indicator goes off).

- "**FADE**" flashes: Fade-out

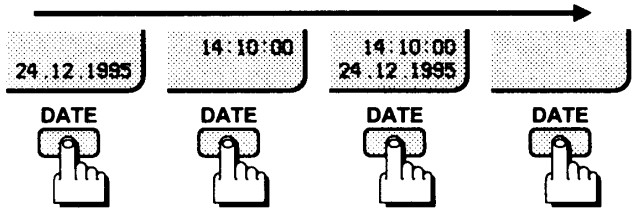
☞**Note:** During recording, the fade-out function can be cancelled or turned on by pressing the **FADE** button.



Recording the date and time

The date and time will be recorded on the tape as displayed in the viewfinder. The date and time will not be displayed if they have not been set. (See page 10.)

Press the **DATE** button to select the desired display mode, as shown below.



Remaining tape display

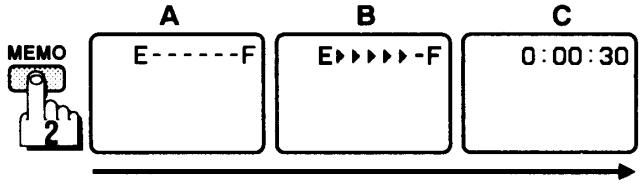
1 Set the camcorder to recording mode.

2 Press the **COUNTER MEMO** button.

A: The counter display changes to the remaining tape display.

B: After approximately 20 seconds, the remaining tape is displayed. The ▸ symbol indicates tape remaining.

C: After approximately 10 seconds, the counter is displayed again.



■ To check the remaining tape

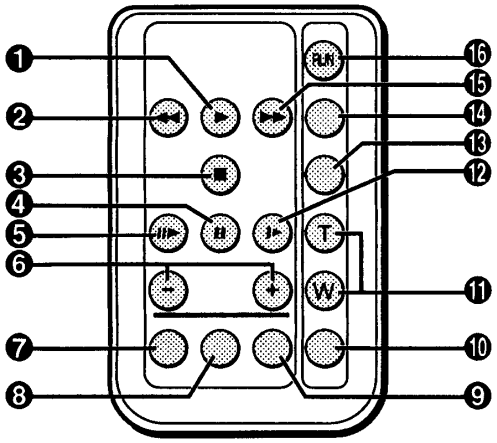
Press the **COUNTER MEMO** button. The remaining tape **(B)** is displayed for a few seconds, then the display will automatically return to the counter display.

☞**Notes:**

- Once the camcorder has been set to recording mode and the remaining tape has been calculated, it can be displayed by pressing the **COUNTER MEMO** button. However, the remaining tape display will not appear during recording pause mode.
- If the **POWER** switch is set to "**OFF**" or to the "**PLAYER**" position, or if the tape is unloaded, the remaining tape display will be cancelled.

REMOTE CONTROL PARTS NAMES

❶ Playback button (**PLAY**)
❷ Rewind/Reverse search button (**REW**)
❸ Stop button (**STOP**)
❹ Still button (**STILL**)
❺ Frame advance button (**F.ADV**)
❻ Scene search buttons (**– SCENE SEARCH +**)
❼ On-screen display button (**DATA**)
❽ Counter reset button (**COUNTER RESET**)
❾ Counter memory button (**COUNTER MEMORY**)
❿ Recording start/stop button (**REC START/STOP**)
⓫ Zoom buttons (**ZOOM; T, W**)
⓬ Slow button (**SLOW**)
⓭ Programme cancel button (**CANCEL**)
⓮ Programme memory button (**MEMO**)
⓯ Fast-forward/Forward search button (**FF**)
⓰ Edit start button (**RUN**)



USING THE REMOTE CONTROL

The lithium battery has been installed in the remote control supplied with your camcorder (before using the remote control, pull-out the battery protector sheet).

The remote control can be used within a range of 4 m (13 ft) from the front of the sensor window on the camcorder, If the range seems to decrease or the remote control does not function, replace the remote control lithium battery.

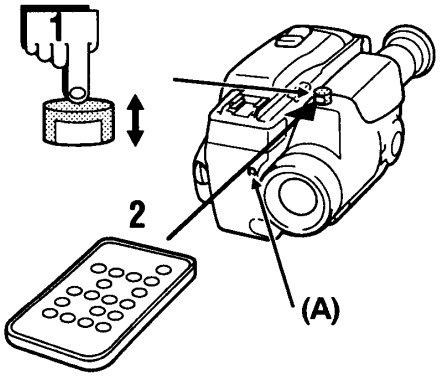
1 Press on the remote control sensor to expose it. The remote control sensor on the camcorder can then be turned to face any direction. Press it again to conceal it when not using the remote control.

2 Direct the remote control toward the remote control sensor window, press the desired buttons to operate the camcorder.

During recording, the recording indicator (A) will light. It will flash during a recording pause.

☞**Note:** Remote control operation is not possible if:

- a strong light or sunlight is directed at the remote control sensor,
- there is an obstacle between the remote control unit and the camcorder,
- it is operated from the cassette holder side of the camcorder.



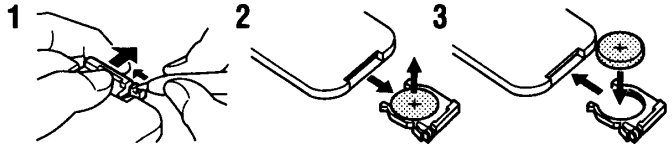
Replacing the lithium battery

1 Using the tip of a pen, open the lithium battery tray at the back of the remote control.

2 Pull out the tray and remove the old battery.

3 Place a new lithium battery in the tray with the (+) side facing up, then insert the battery tray fully into the remote control.

☞**Note:** Please refer to the **WARNING** on page 9 concerning the handling of the lithium battery.



PROGRAMMED EDITING USING THE REMOTE CONTROL

Programmed editing allows you to select up to 8 segments of the recording to transfer to a new tape.

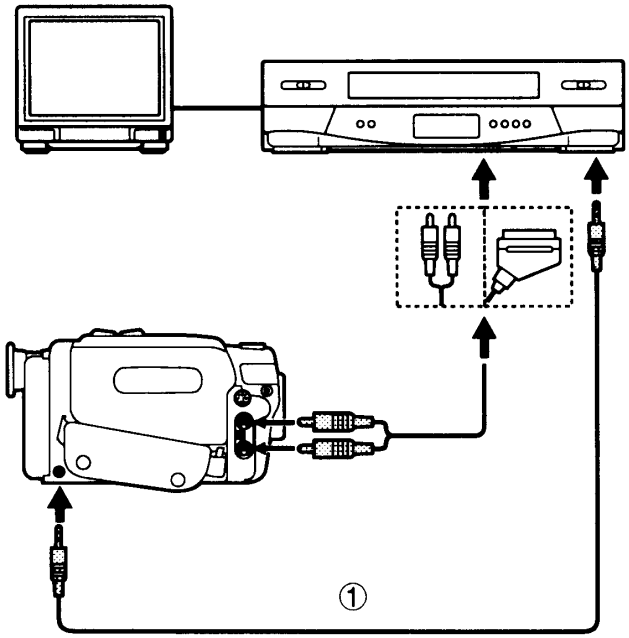
This can be only operated with a VCR having a LANC terminal.

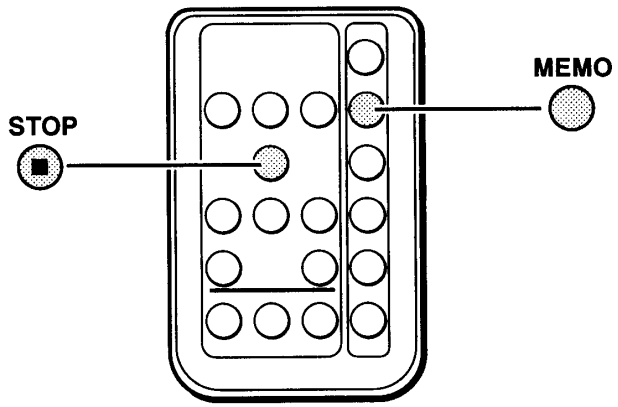
☞**Note:** Connect the LANC cable ① (ϕ 2.5, stereo type) only after the programmed segments numbers are displayed on the TV. Connecting it before may cause incorrect operation.

Connections

Connect all the units as illustrated below.

Turn all units on. (Set the camcorder **POWER** switch to "**PLAYER**".)

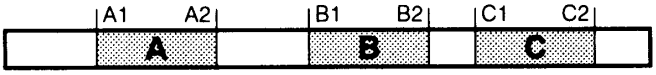




Setting the programmed editing

You can select up to 8 segments of your recorded tape, and copy them to a VCR.

Example: To select segments A, B and C from a recorded tape and copy them in the order A, C, B.



1 Playback the tape in the camcorder. When the tape has reached the beginning of the desired segment, point A1, press the **MEMO** button.
1 will start flashing in the viewfinder and the counter reading, for the recording start position, is memorized.

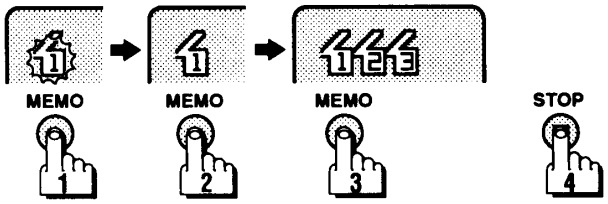
2 Press the **MEMO** button again at the end of the desired segment, point A2.
1 will light (stop flashing) and the counter reading, for the recording end position, is memorized.

3 Repeat steps **1** and **2** for segments C and B in that order.
When the 3 segments have been selected, 1, 2 and 3 will be displayed in the viewfinder.

4 When finished setting the programmed editing, press the **STOP** button to stop the tape in the camcorder.

☞**Notes:**

- If you need to fast-forward the tape or use the scene search function to locate the beginning or the end of a segment, make sure to go back to normal playback before pressing the **MEMO** button.
- The segments should be at least 5 seconds long for the programmed editing to function correctly.
- While setting a programmed editing, the counter cannot be reset.
- The programmed editing function uses the counter readings to locate the start and end of the segments. In some cases, the start and end positions may not match the exact programmed positions.



Programmed editing

1 Load a blank tape into the VCR, then set it to recording pause mode.

2 Press the **RUN** button on the remote control. The editing will start automatically.

The tape in the camcorder is rewound, and segments A, C and B will be searched then played back in the selected order.

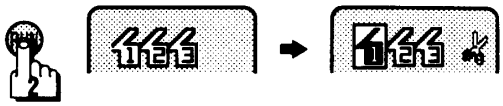
- The VCR will switch between recording and recording pause mode to match playback on the camcorder.
- If the **DATA ON SCREEN** button has been pressed, the on-screen display will appear while a segment is searched, however it will disappear while the segment is being copied.

3 When programmed editing is finished, the camcorder is switched to stop mode, and the VCR to recording pause mode.

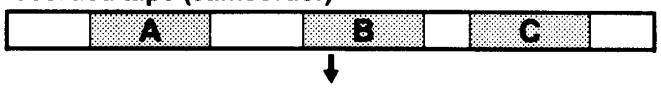
You can then, erase the programmed editing settings and programme another 8 segments to be edited to the same tape in the VCR, or load another blank tape in the VCR and simply press the **RUN** button to copy the same 8 segments.

☞**Notes:**

- After editing, the settings are not erased until the cassette tape is unloaded, or the **POWER** switch on the camcorder set to "**OFF**".
- For more details on how to operate the VCR, please refer to its instruction manual.
- To stop programmed editing, press the **STOP** button, then stop the VCR.



Recorded tape (camcorder)



Tape recorded using the programmed editing function (VCR)

Erasing, changing programmed editing settings

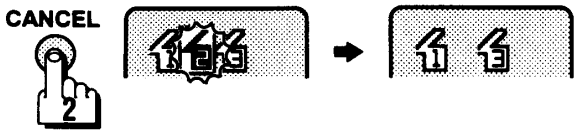
To change a segment setting, first erase it, then programme the new setting.

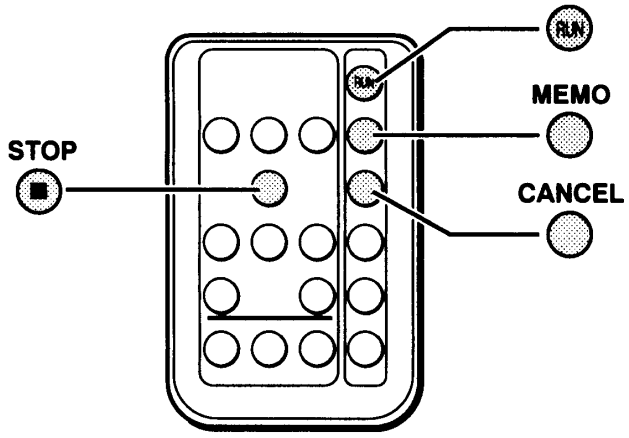
1 Rewind (or advance) the tape to the segment to cancel, then start playback.
The programme number will start flashing.

2 Press the **CANCEL** button while the programme number is flashing.
The programme number will flash rapidly for a few seconds then disappear.
The settings corresponding to that programme number are now erased.

☞**Notes:**

- When one segment setting is erased, its number will stay available, if another segment is programmed, it will be assigned the lowest available number.
- To erase all the settings, unload the cassette tape or set the **POWER** switch to "**OFF**".





■ About programmed editing and LANC connections

Once the programmed editing is completed, set the **POWER** switch on the camcorder to "**OFF**", then disconnect the LANC cable.

PLAYBACK

The camcorder can be used to play back a recorded tape and view it on a TV receiver.

For playback, a stable power supply to the camcorder is necessary, it is recommended to use the AC adaptor/ charger. (See page 5.)

Load the recorded tape into the camcorder, then set POWER switch to "PLAYER".

- Press the **PLAY** button to start playback.
- Press the **STILL** button for a still picture. Press the **STILL** button again to resume playback.
  Press the **STOP** button to stop playback.
- Press the **REW** button to rewind the tape.
- Press the **FF** button to advance the tape.
  To stop the tape, press the **STOP** button.

Picture Search

- While the tape is being rewound or advanced, press and hold the **REW** or **FF** button to watch the picture playback.
  Release the **REW** or **FF** button to resume normal tape rewind or advance.
- During tape playback, press and hold the **REW** or **FF** button to watch the picture playback.
  Release the **REW** or **FF** button to resume normal playback.

Scene Search

- During still picture playback, press and hold the **SCENE SEARCH (–)** or **(+)** button to watch a reverse or forward picture playback.
  Release the **SCENE SEARCH** button to resume normal still picture playback.

☞**Notes:**

- The sound is muted during playback modes other than normal playback.
- During reverse picture playback there will be some noise bands in the picture, this is normal and does not indicate a malfunction.
- If still picture playback continues for more than 5 minutes, the unit is switched to stop mode to prevent the tape from being damaged.

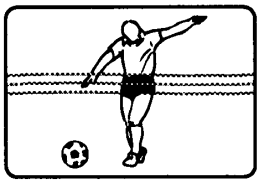
Frame Advance (The remote control only)

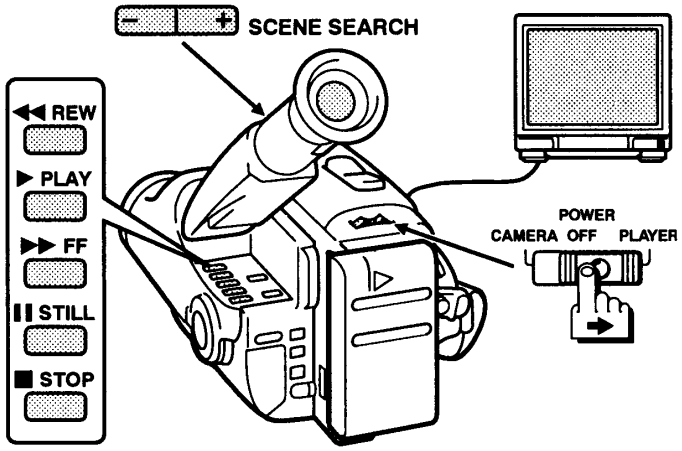
During still picture playback, press the **F.ADV** button to advance the picture one frame at a time. Press the **PLAY** button again to resume playback.

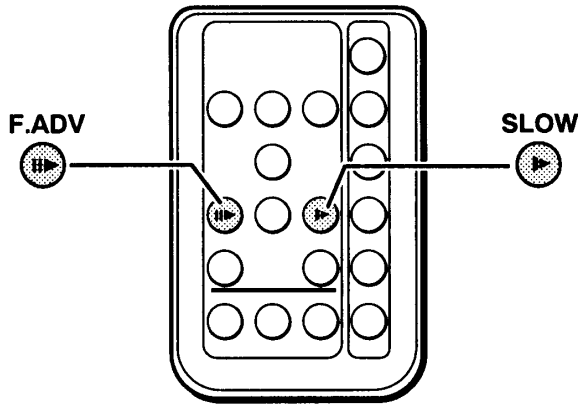
Slow Motion (The remote control only)

During playback or still picture playback, press the **SLOW** button to start slow motion playback. Press the **PLAY** button to resume playback, or press the **STILL** button to resume still picture playback.

If noise bars are visible during slow motion playback, press the **SCENE SEARCH (+)** or **(–)** button repeatedly until corrected.







TAPE COPY

Please refer to page 20 on how to connect the camcorder.

1. Connect the camcorder to a VCR.
2. Load the recorded tape into the camcorder. Set the erasure-prevention switch so that the tape cannot be recorded on. (See page 7.)
3. Set the camcorder **POWER** switch to "**PLAYER**".
4. Turn on the VCR and load the tape for recording.
5. Set the VCR to external input mode, then set it to recording pause mode.
6. Press the **PLAY** button on the camcorder, to start playback.
7. Start recording on the VCR.
8. When finished, stop recording on the VCR, then press the **STOP** button on the camcorder.

☞**Notes:**

- When copying a tape, the picture and sound will not be as good as on the original tape.
- During editing operations, it is recommended to connect the camcorder to an AC outlet with the AC adaptor/charger.

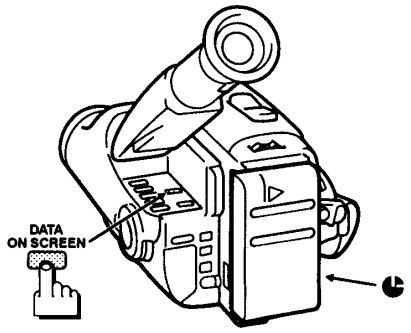
■ On-screen display

When the camcorder is connected to a TV receiver, the indications appearing in the viewfinder can be displayed on the TV screen by pressing the **DATA ON SCREEN** button. Pressing this button again will cancel the on-screen display. Please refer to page 20 on how to connect the camcorder.

☞**Note:** If the on-screen display is activated during tape copy, it will be recorded on the tape along with the picture and sound.

■ LANC terminal

The symbol ⏾ identifies the LANC (Local Application Control Bus System) terminal. If you are using an edit controller or a computer for special editing functions, the external equipment is connected to the LANC terminal to precisely control all the tape transport functions of your camcorder. Please refer to the concerned equipment instruction manual for detailed operation.



VIDEO LIGHT

A video light (sold separately) can be installed on the accessory shoe.

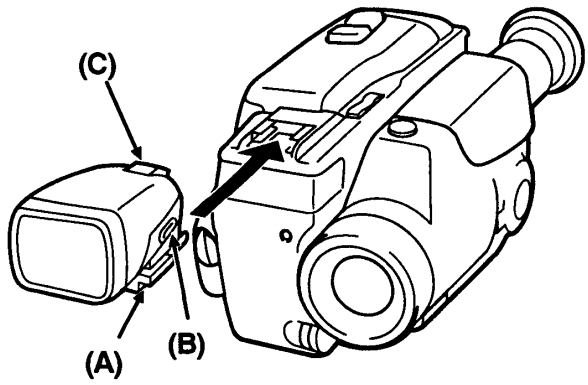
■ Installing the video light

Slide the video light foot (A) into the accessory shoe, until a click is heard and it is firmly locked into place.

To remove the video light, press and hold button (B), then pull the video light toward the front.

■ Using the video light

Set the **POWER** switch on the camcorder to "**CAMERA**", set the stand-by switch to "**STANDBY**", then press the power switch (C) on the video light to turn it on and off.



☞**Note:** The video light cannot be used if the remote control is connected to the camcorder.

WARNING:

When the video light is used, it will get very hot. Be careful not to get burnt by touching the front glass or the light cabinet when the video light is on or just after it has been turned off.

If the video light bulb is burnt out, have it replaced by the dealer where it was purchased.

Connections to a TV or VCR equipped with a SCART terminal or AUDIO/VIDEO terminals

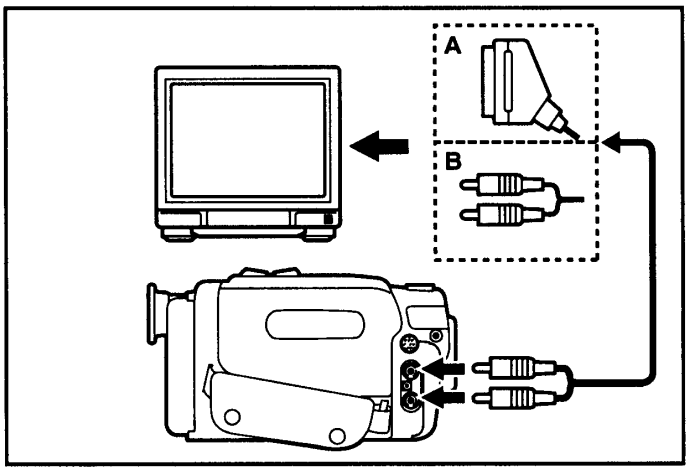
Connect the cable yellow connector to the **VIDEO** output terminal (yellow) and the white connector to the **AUDIO** output terminal (white) on the camcorder. Then,

A: Connect the SCART connector to the SCART terminal on the TV or VCR.

B: Connect the cable yellow connector to the **VIDEO** input terminal (yellow) and the white connector to the **AUDIO** input terminal (white) on the TV or VCR.

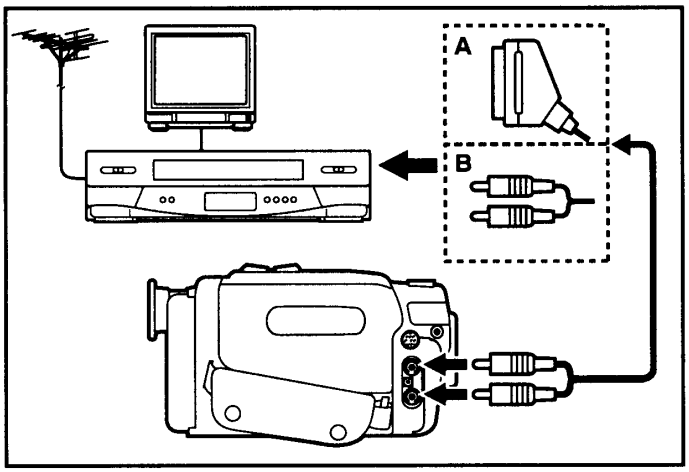
■ Connection for playback on a TV

When connected, make sure to set the **TV/VCR** switch on the TV to "**VCR**".



■ Connection for editing to a VCR

When connected, make sure to set the **TV/VCR** switch on the TV to "**VCR**", and set the input on the VCR to external input mode.



Connections to a TV not equipped with a SCART terminal or AUDIO/VIDEO terminals

You will need an RF converter and RF cable.

1 Unplug the aerial cable from your TV and reconnect it to the **ANT IN** terminal on the RF converter.

2 Connect the RF cable to the **ANT OUT** terminal on the RF converter and to the ANT IN terminal on your TV.

3 Connect the RF converter to your camcorder.

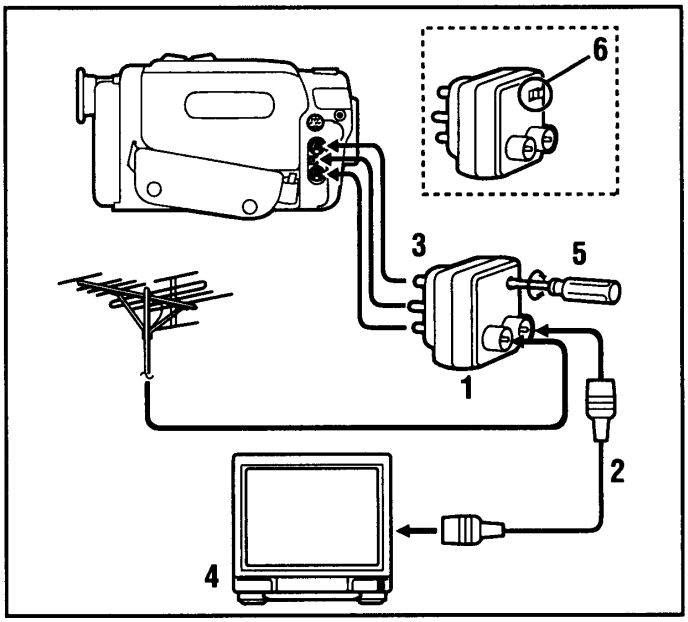
4 Turn the TV on, and start playback on the camcorder.

5 Select an available channel on the TV, e.g. not used for broadcasting.

(Australia: go to step 6)

With a small screwdriver turn the RF channel screw on the RF converter until the picture and sound from the camcorder are played back clearly on the TV.

6 Set the channel on the RF converter to the position corresponding to your TV setting. The picture and sound from the camcorder should be played back on the TV.
If no picture is visible, tune in your TV until the best picture and sound is obtained.



Please refer to the accessories listing for the cable, converter and adaptor used for the connections. Accessories not listed in the accessories listing must be bought separately.

MAINTENANCE

Video heads maintenance

- When the camcorder has been used for a long time, the sound and picture playback quality deteriorate (as illustrated). In such case, the video heads should be cleaned.
- Be very careful when using commercially available video head-cleaning products, as some might not be effective or damage the heads.
- Video heads will wear after they have been used for a long period. If the playback quality is poor, even after having cleaned the video heads, they might need to be replaced. For detailed information and assistance, please consult your dealer.

☞**Note:** Do not use commercially available wet-type video head-cleaning cassettes. They may damage the video heads in your unit. For the most suitable head-cleaning cassettes, please consult the dealer where the unit was purchased.

Inspection at 1000-hour intervals

For continued trouble free operation and beautiful pictures, it is recommended to have the unit inspected (including cleaning, lubrication and replacement of worn parts as necessary), every 1000 hours of use (approximately). For detailed information and assistance, please consult your dealer.

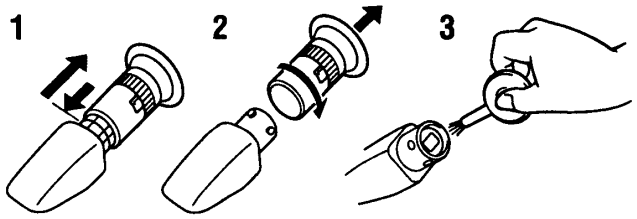
Cleaning the viewfinder

1 Fully pull out the eye-piece, then push it back slightly.

2 Turn it towards the left (in the direction of the arrow, as illustrated), then remove it.

3 Use an air blower (sold separately) to remove any dust on the viewfinder.

Reassemble in the reverse order of disassembly.



Using the camcorder abroad

■ To recharge the battery pack in a foreign country

The AC adaptor/charger can be used in any country where the standard voltage is between 100 V and 240 V AC. You may need a plug adaptor (sold separately) to use the AC adaptor/charger abroad.

■ To view the tape playback on a TV receiver

It is always possible to view the tape playback in the viewfinder.

To watch playback on a TV, you will need to connect the camcorder to a TV using the same colour system standard (PAL).

Main countries using the PAL standard:

Australia, Austria, Belgium, Britain, China, Denmark, Germany, Holland, Hong Kong, Italy, Kuwait, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand

Main countries using the SECAM standard:

Bulgaria, France, Hungary, Iran, Iraq, Luxembourg, Monaco, Poland, CIS

Main countries using the NTSC standard:

Canada, Japan, Korea, Mexico, the Philippines, Taiwan, U.S.A.

TROUBLESHOOTING GUIDE

If the camcorder seems not to be operating normally, first check the items below. If operation is still not normal, please consult the dealer where the unit was purchased.

Symptom	Possible Cause	Corrective Action
No power	Is the battery pack exhausted?	Recharge the battery pack
	Is the battery pack incorrectly installed?	Install the battery pack correctly
	Is the AC adaptor/charger DC connecting cord incorrectly installed?	Install the DC connecting cord correctly
The power is on, but the unit cannot be operated	Is the 💧 indicator displayed in the viewfinder?	Wait until the condensation inside the unit dries up
	Is the stand-by switch set to "**POWER SAVE**"?	Set the stand-by switch to "**STANDBY**"
The power is cut during operation	Is the battery pack exhausted?	Recharge the battery pack
	Was recording pause mode continued for 5 minutes or more?	Press the **REC START/STOP** button, or set the stand-by switch to "**POWER SAVE**" then to "**STANDBY**"
Recording is not possible	Is a cassette tape loaded in the camcorder?	Load a cassette tape
	Is the tape wound to the end?	Rewind the tape, or load a blank cassette tape
	Is the cassette erasure prevention switch set to the red position?	Change the switch position, or insert a blank cassette tape
Focus is not working properly	Is the recorded subject difficult to focus on or too dark?	Set the camcorder to manual focus
Noise in the playback picture	Are the video heads dirty?	Clean the video heads
The remote control doesn't operate	Is the battery exhausted?	Replace the battery
	Is the remote control sensor concealed?	Release the remote control sensor
	Is the remote control operated from more than 4 m (13 ft)?	Operate the remote control from within 4 m (13 ft)
	Is the remote control aimed at the remote control sensor window?	Aim the remote control at the sensor window on the camcorder
	Is there an obstacle between the remote control and the camcorder?	Change the direction of the remote control sensor or the position of the remote control
The battery pack charge doesn't last the normal duration	Is the battery pack fully charged?	Use the battery pack completely before recharging it, or use the Refresh feature of the AC adaptor/charger to fully charge the battery pack
		Check the battery pack life span

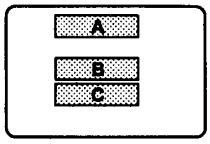
SPECIFICATIONS

■ Camcorder

Television system:	PAL, CCIR
Video recording system:	Rotating 2-head, helical-scan system
Audio recording system:	Rotating head, FM system
Cassette type:	8 mm video cassette tape
Tape speed:	SP: approx. 20.051 mm/sec.
Maximum recording time:	90 minutes (P5-90 cassette) SP mode
Fast forward/Rewind time:	Approx. 6.5 minutes (P5-90 cassette)
Image sensor:	CCD solid-state type (320,000 pixels)
Viewfinder:	0.6 inch electronic viewfinder (black and white)
Lens:	10x power zoom F1.8 (f=5.8 to 58 mm)
Filter diameter:	37 mm
Focus:	Fuzzy logic auto focus
White balance:	Full auto fuzzy logic
Iris:	Fuzzy logic auto iris
Minimum subject illumination:	2 lux (Low Light mode)
Subject illumination range:	2 to 100,000 lux
Recommended subject illumination:	300 lux or more
Power supply:	6 V: battery pack 6.5 V: AC adaptor/charger
Power consumption:	5.4 W during camera recording
Operating temperature range:	0°C to 40°C (32°F to 104°F)
Storage temperature range:	–20°C to 60°C (–4°F to 140°F)
Dimensions (W x H x D):	Approx. 119 x 111 x 205 mm
Weight:	Approx. 780 g (excluding the battery pack and tape)
Microphone:	Electret condenser type, omnidirectional
Video output terminal:	Video output 1 Vp-p, 75 ohms unbalanced, negative sync
Audio output terminal:	Audio output –7 dBs, 2.2 kohms or less

Products are subject to change in design and specifications without notice and without incurring any obligation.

■ Warning indicators (blinking)



A: The power to the camera will soon be cut off.

B: No cassette is loaded, or the loaded cassette has the erasure-prevention switch set to the red position.

Condensation has formed inside the unit.

C: **TAPE** The tape is within about 5 minutes from the end.

TAPE END The tape has reached the end.

SANYO

1AG6P1P0157--
ER25P/E, A (0494SY01)

SANYO Electric Co., Ltd.
Printed in Japan